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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/709,485	05/09/2004	WEI LU		3484
43447	7590	06/13/2007	EXAMINER	
WEI LU			FOX, BRYAN J	
1218 BUBB RD			ART UNIT	PAPER NUMBER
CUPERTINO, CA 95014			2617	
		MAIL DATE	DELIVERY MODE	
		06/13/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/709,485	LU ET AL.	
	Examiner	Art Unit	
	Bryan J. Fox	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 30 March 2007.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-14 and 21 is/are pending in the application.
4a) Of the above claim(s) 22-26 is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-14, 21 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) Notice of Informal Patent Application
6) Other: _____.

DETAILED ACTION

Election/Restrictions

Newly submitted claims 22-26 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Claims 1-15 are drawn to a system or method for a wireless communication device to support various wireless standards, classified in class 455, subclass 426.1, while claims 22-26 are drawn to a Media Access Control protocol.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 22-26 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bushnell et al (US007058415B2) in view of Wee et al (US 20030220074A1) and further in view of Lockhart (US006173189B1).

Regarding claim 1, Bushnell et al disclose a dual mode telephone station set with one Directory Number (see column 4, line 59 – column 5, line 55), which reads on the

claimed, "wireless communication terminal device supporting various different wireless air interfaces in the same device with same unique identifier based on open Air-Interface BIOS architecture and capable of communicating with other devices, systems or networks through said open Air-Interfaces." The cordless base station (see column 5, line 57 – column 6, line 24) reads on the claimed, "open computer system equipped with full networking facilities to access various different backbone networks either through wireline networking interfaces or through broadband wireless communication systems of said open Air-Interfaces," and, "said base transceiver system connecting to said computer system wirelinely to construct the open base-station as a whole." The dual mode telephone operates as a cellular telephone or a cordless telephone (see column 4, line 59 – column 5, line 11), which reads on the claimed, "said wireless terminal device connecting to different wireline network through its wireline Network Interface Unit in said wireless terminal device." Bushnell et al fail to expressly disclose said base-station can connected to other base station or said wireless terminal can also connected to other wireless terminal in an ad-hoc mode.

In a similar field of endeavor, Wee et al disclose a portable wireless system that may be configured to operate as a third party wireless repeater (see paragraph 31).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Bushnell et al with Wee et al to include the above configuration as a wireless repeater in order to increase the utilization of existing wireless network infrastructures by making one or more unused wireless channels available to other devices as suggested by Wee et al (see paragraph 27). The combination reads on the

claimed, "said base station connecting to other said base station either over the wireline networks or over broadband wireless access system through said computer system, or through said base transceiver system of said open Air-Interfaces in an ad-hoc mode, and said wireless terminal device connecting directly to other said wireless terminal device through said open Air-Interfaces in an ad-hoc mode." The combination of Bushnell et al and Wee fails to disclose an open base transceiver system supporting various different air interfaces based on said open Air-Interface BIOS architecture to interconnect said wireless communication terminal device through said open Air-Interfaces.

In a similar field of endeavor, Lockhart discloses a base station in a radio communication system capable of receiving reverse channel data using two over the air protocols (see column 4, lines 52-61), which reads on the claimed, "open base transceiver system supporting various different air interfaces based on said open Air-Interface BIOS architecture to interconnect said wireless communication terminal device through said open Air-Interfaces."

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Bushnell et al and Wee et al with Lockhart to include the above multimode base station in order to share channels or equipment efficiently as suggested by Lockhart (see column 1, lines 13-18).

Regarding claim 2, Bushnell et al disclose a dual mode handset (see column 4, line 59 – column 5, line 55), which reads on the claimed, "open processing engine processing the signals and protocols of said open Air-Interfaces." The mobile phone

communicates wirelessly with a base station (see column 4, line 59 – column 5, line 11), which reads on the claimed, “reconfigurable and open digital converter transforming the received analog signals to the digital base-band signals and vice versa, and connecting to said open processing engine,” wherein wireless communication necessitates a digital converter. The mobile phone may communicate via a cordless base station or a cellular mode (see column 4, line 59 – column 5, line 55), which reads on the claimed, “programmable and open radio frequency (RF) module and smart antenna processing module of different frequencies supporting said open air-interfaces, and connecting to said digital converter,” and, “an open wireless BIOS (basic input/output system) architecture capable of providing the common and open interfaces to said processing engine, said digital converter...and mapping said open air interfaces into different parameters of said open interfaces.” Bushnell et al fail to disclose a software definable module (SDM) containing parameters, algorithms and protocols of some wireless air-interfaces to be stored in an external memory card or downloaded from networks.

In a similar field of endeavor, Wee et al disclose a controller 102 that configures portable wireless system 10 to relay wireless signals between a third party electronic appliance and a wireless network that may be implemented in a separate module (e.g. a PC card, such as a PCMCIA card) that plugs into a legacy portable wireless device (see paragraph 33), which reads on the claimed, “software definable module (SDM) containing parameters, algorithms and protocols of said open air-interfaces to be stored in an internal memory, external memory card or downloaded from networks.”

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Bushnell et al with Wee et al to include the above separate module in order to provide backward compatibility. The combination of Bushnell et al and Wee fails to disclose an open base transceiver system supporting various different air interfaces based on said open Air-Interface BIOS architecture to interconnect said wireless communication terminal device through said open Air-Interfaces.

In a similar field of endeavor, Lockhart discloses a base station in a radio communication system capable of receiving reverse channel data using two over the air protocols (see column 4, lines 52-61), which reads on the claimed, "open base transceiver system supporting various different air interfaces based on said open Air-Interface BIOS architecture to interconnect said wireless communication terminal device through said open Air-Interfaces."

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Bushnell et al and Wee et al with Lockhart to include the above multimode base station in order to share channels or equipment efficiently as suggested by Lockhart (see column 1, lines 13-18).

Regarding claim 3, the combination of Bushnell et al, Wee et al and Lockhart discloses the dual mode telephone station is programmed to operate as a cordless telephone when in proximity of the cordless base station and operates as a cellular telephone when it is out of reach of the cordless base station (see Bushnell et al column 4, lines 59-64), which reads on the claimed, "open system software module based on said open wireless BIOS architecture, supporting dynamic spectrum management,

spectrum sharing and open resource management to increase spectrum efficiency and optimize the system performance and wireless transmission performance.” When the dual mode telephone station set is in range of the cordless base station, the dual mode handset originated calls are routed through the local wire-line system and when the dual mode telephone station set is not in proximity to the cordless base station, the dual mode telephone station set registers with the cellular service provider (see Bushnell et al column 5, lines 30-55), which reads on the claimed, “open convergence layer module converging wireline and wireless networks and services, as well as transmission convergence of said open air-interfaces.” The transition between the cordless base station and the cellular system (see Bushnell et al column 5, lines 30-55) reads on the claimed, “open configuration management module enabling flexible system re-configuration when said open air-interfaces changing, wireline networking changing or system setting changing.” The subscriber authentication (see Bushnell et al column 3, lines 39-64) reads on the claimed, “open security model for the enhanced security management of the system.”

Regarding claim 4, the combination of Bushnell, Wee et al and Lockhart discloses the programming of the dual mode telephone station (see Bushnell et al column 4, lines 59-64) reads on the claimed, “said wireless terminal device comprising system software, application software and real-time OS running upon the system hardware through said open wireless BIOS.”

Regarding claim 5, the combination of Bushnell et al, Wee et al and Lockhart discloses the operation of the dual mode telephone station set with the cordless base

station and the cellular system (see column 4, line 59 – column 5, line 55), which reads on the claimed, “said open processing engine decodes, de-channelizes and demodulates the open base-band channel signals and control signals of said open air-interfaces into detailed digital signaling, traffic and control information based on said open wireless BIOS architecture.”

Regarding claim 6, Bushnell et al fails to disclose said base station can be reconfigured and re-programmed as wireless router, mobile soft switch or wireless gateway of said open air-interfaces.

In a similar field of endeavor, In a similar field of endeavor, Wee et al disclose a portable wireless system that may be configured to operate as a third party wireless repeater (see paragraph 31), which reads on the claimed, “said base station can be reconfigured and re-programmed as wireless router, mobile soft switch or wireless gateway of said open air-interfaces.”

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Bushnell et al with Wee et al to include the above configuration as a wireless repeater in order to increase the utilization of existing wireless network infrastructures by making one or more unused wireless channels available to other devices as suggested by Wee et al (see paragraph 27). The combination of Bushnell et al and Wee fails to disclose an open base transceiver system supporting various different air interfaces based on said open Air-Interface BIOS architecture to interconnect said wireless communication terminal device through said open Air-Interfaces.

In a similar field of endeavor, Lockhart discloses a base station in a radio communication system capable of receiving reverse channel data using two over the air protocols (see column 4, lines 52-61), which reads on the claimed, "open base transceiver system supporting various different air interfaces based on said open Air-Interface BIOS architecture to interconnect said wireless communication terminal device through said open Air-Interfaces."

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Bushnell et al and Wee et al with Lockhart to include the above multimode base station in order to share channels or equipment efficiently as suggested by Lockhart (see column 1, lines 13-18).

Regarding claim 7, Bushnell et al fails to disclose said base station can be reconfigured to be portable and/or mobile as well for military applications or special industrial applications.

In a similar field of endeavor, Wee et al disclose a portable wireless system that may be configured to operate as a third party wireless repeater (see paragraph 31), which reads on the claimed, "said base station can be reconfigured to be a mobile base station for military applications or special industrial applications that said computer system connecting to said backbone networks through said broadband wireless communication systems of said open air-interfaces instead of said wireline networking interfaces."

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Bushnell et al with Wee et al to include the above configuration

as a wireless repeater in order to increase the utilization of existing wireless network infrastructures by making one or more unused wireless channels available to other devices as suggested by Wee et al (see paragraph 27). The combination of Bushnell et al and Wee fails to disclose an open base transceiver system supporting various different air interfaces based on said open Air-Interface BIOS architecture to interconnect said wireless communication terminal device through said open Air-Interfaces.

In a similar field of endeavor, Lockhart discloses a base station in a radio communication system capable of receiving reverse channel data using two over the air protocols (see column 4, lines 52-61), which reads on the claimed, "open base transceiver system supporting various different air interfaces based on said open Air-Interface BIOS architecture to interconnect said wireless communication terminal device through said open Air-Interfaces."

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Bushnell et al and Wee et al with Lockhart to include the above multimode base station in order to share channels or equipment efficiently as suggested by Lockhart (see column 1, lines 13-18).

Regarding claim 8, the combination of Bushnell et al, Wee et al and Lockhart discloses the use of CDMA (see Bushnell et al column 3, line 65 – column 4, line 27), which reads on the claimed, "said wireless terminal device and said base station can communicate each other over said open different air interfaces including...CDMA."

Regarding claim 9, the combination of Bushnell et al, Wee et al and Lockhart discloses the dual mode telephone station is programmed to operated as a cordless telephone when in proximity of the cordless base station and operates as a cellular telephone when it is out of reach of the cordless base station (see Bushnell et al column 4, lines 59-64), which reads on the claimed, "performing initial channel processing from the received signals, scanning frequency carrier from the received signals, performing different decoding scheme from the received signals, performing different demodulation scheme from the received signals, and calculating radio link parameters and models of said open wireless BIOS architecture."

Regarding claim 10, the combination of Bushnell et al, Wee et al and Lockhart discloses the dual mode telephone station is programmed to operated as a cordless telephone when in proximity of the cordless base station and operates as a cellular telephone when it is out of reach of the cordless base station (see Bushnell et al column 4, lines 59-64), which reads on the claimed, "open operating systems including Windows, Linux or user-defined, open resource management including spectrum, bandwidth, channels, capacity, processors, power, storage and services, open communication application software enabling user-friendly programming and services, common objects library and functional components defining the converged processing elements and open interface parameters of said open wireless BIOS architecture, open configuration management including system reconfiguration in base-band parts, RF parts, antenna parts, network parts and service parts."

Regarding claim 11, the combination of Bushnell et al and Wee et al discloses the dual mode telephone station is programmed to operate as a cordless telephone when in proximity of the cordless base station and operates as a cellular telephone when it is out of reach of the cordless base station (see Bushnell et al column 4, lines 59-64), which reads on the claimed, "said open wireless BIOS further defining the basic interface structure for said open air-interfaces, said open air-interfaces switching, said open system modules as well as switching between internal and external open modules of said open air-interfaces."

Regarding claim 13, Bushnell et al fail to disclose a software definable module of said open air-interfaces in said wireless terminal device can be stored in or installed from said external memory card, or downloaded through said network interface unit of said wireless terminal device.

In a similar field of endeavor, Wee et al disclose a controller 102 that configures portable wireless system 10 to relay wireless signals between a third party electronic appliance and a wireless network that may be implemented in a separate module (e.g. a PC card, such as a PCMCIA card) that plugs into a legacy portable wireless device (see paragraph 33), which reads on the claimed, "software definable module in said wireless terminal device can be stored in or installed from said external memory card (or SIM card), or downloaded from any available networking facilities of said wireless terminal device."

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Bushnell et al with Wee et al to include the above separate

module in order to provide backward compatibility. The combination of Bushnell et al and Wee fails to disclose an open base transceiver system supporting various different air interfaces based on said open Air-Interface BIOS architecture to interconnect said wireless communication terminal device through said open Air-Interfaces.

In a similar field of endeavor, Lockhart discloses a base station in a radio communication system capable of receiving reverse channel data using two over the air protocols (see column 4, lines 52-61), which reads on the claimed, "open base transceiver system supporting various different air interfaces based on said open Air-Interface BIOS architecture to interconnect said wireless communication terminal device through said open Air-Interfaces."

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Bushnell et al and Wee et al with Lockhart to include the above multimode base station in order to share channels or equipment efficiently as suggested by Lockhart (see column 1, lines 13-18).

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bushnell et al in view of Wee et al and Lockhart as applied to claim 2 above, and further in view of Guo (US 20020187813A1).

Regarding claim 12, the combination of Bushnell et al, Wee et al and Lockhart fails to disclose the use of antenna arrays and beamforming.

In a similar field of endeavor, Guo discloses beamforming antenna arrays (see paragraph 42), which reads on the claimed, "using antenna arrays to process radio

signals...in both space and time to improve performance in presence of wireless fading and interference, using beamforming algorithm to increase received signal-over-noise-rate for desired directions, using diversify algorithm to combat fading in order to work at less SNR, using interference mitigation method to maximally reuse the channel frequencies and share the spectrum, and using spatial multiplexing algorithms to increase data speeds, for example, multiple-in and multiple-out (MIMO)."

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Bushnell et al, Wee et al and Lockhart with Guo to include the above use of beamforming antenna arrays in order to reduce initial deployment costs of a wireless network as suggested by Guo (see paragraph 2).

Claims 14 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bushnell et al in view of Wee et al and Lockhart as applied to claim 3 above, and further in view of what was well-known in the art (see MPEP 2144.03)

Regarding claim 14, the combination of Bushnell et al and Wee et al discloses the dual mode telephone station is programmed to operate as a cordless telephone when in proximity of the cordless base station and operates as a cellular telephone when it is out of reach of the cordless base station (see Bushnell et al column 4, lines 59-64), which reads on the claimed, "open service convergence including service-oriented mobility infrastructure across both wireline and wireless networks," and, "open transmission convergence including adaptive modulation, adaptive coding and adaptive

equalization of said open air-interfaces based on said open wireless BIOS architecture."

The combination of Bushnell et al, Wee et al and Lockhart fails to disclose the use of IP.

The Examiner takes official notice that IP was well known in the art at the time of the invention.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Bushnell et al, Wee et al and Lockhart to include the above use of IP in order to take advantage of the benefits of IP such as unique global addressing.

Regarding claim 21, Bushnell et al disclose a dual mode telephone station set with one Directory Number (see column 4, line 59 – column 5, line 55), which reads on the claimed, "software detecting available wireless networks of said open air interfaces in the service geographic area, software configuring the detected said wireless networks and installing the required modules of said open air interfaces with said open wireless BIOS architecture, software providing the information input methods for said wireless terminal device," and, "software providing connection methods for said wireless terminal device including traditional mobile networks...broadcasting or user-defined topology, software defining user-preferred service mode based on quality of service, bandwidth, traffic model, billing model and application model." The subscriber authentication (see column 3, lines 40-64) reads on the claimed, "software providing enhanced security solutions for said wireless terminal device," and, "software providing safety solutions for said wireless terminal device." The support of CDMA (see Bushnell et al column 4, lines 3-27) reads on the claimed "software supporting open spectrum management

methods including spectrum sharing, spectrum recycling and multiple spectrum ownership, software providing optimized power management solutions to minimize said wireless terminal device power consumption including base-band processing, radio frequency modules, controllers as well as applications.” Bushnell et al fail to expressly disclose ad-hoc.

In a similar field of endeavor, Wee et al disclose a portable wireless system that may be configured to operate as a third party wireless repeater (see paragraph 31).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Bushnell et al with Wee et al to include the above configuration as a wireless repeater in order to increase the utilization of existing wireless network infrastructures by making one or more unused wireless channels available to other devices as suggested by Wee et al (see paragraph 27). The combination reads on the claimed, “said base station connecting to other said base station either over the wireline networks or over broadband wireless access system through said computer system, or through said base transceiver system of said open Air-Interfaces in an ad-hoc mode, and said wireless terminal device connecting directly to other said wireless terminal device through said open Air-Interfaces in an ad-hoc mode.” The combination of Bushnell et al and Wee fails to disclose an open base transceiver system supporting various different air interfaces based on said open Air-Interface BIOS architecture to interconnect said wireless communication terminal device through said open Air-Interfaces.

In a similar field of endeavor, Lockhart discloses a base station in a radio communication system capable of receiving reverse channel data using two over the air protocols (see column 4, lines 52-61), which reads on the claimed, "open base transceiver system supporting various different air interfaces based on said open Air-Interface BIOS architecture to interconnect said wireless communication terminal device through said open Air-Interfaces."

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Bushnell et al and Wee et al with Lockhart to include the above multimode base station in order to share channels or equipment efficiently as suggested by Lockhart (see column 1, lines 13-18). The combination of Bushnell et al, Wee et al and Lockhart fails to disclose peripherals including digital camera, smart antennas, security button, health detector, GPS and Voice-over IP.

The Examiner takes official notice that system hardware and peripherals including display, digital camera, sensors, smart antennas, security button, radiation detector, health detector, GPS receiver, memory card and Voice-over-IP capability were well known in the art at the time of the invention.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Bushnell et al, Wee et al and Lockhart to include the above use of peripherals in order to extend the capabilities of the device.

Response to Arguments

Applicant's arguments with respect to claims 1-14 and 21 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bryan J. Fox whose telephone number is (571) 272-7908. The examiner can normally be reached on Monday through Friday 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles N. Appiah can be reached on (571) 272-7904. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Bryan Fox
June 9, 2007

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